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ABSTRACT

A 14-month pilot of INFO-U, a fully automated telephone information service, assessed the feasibility of the technology in Minnesota Extension Service (MES) county offices to respond to consumer telephone queries. The project was designed to: (1) explore the potential of regional Extension cooperation and resource sharing; (2) increase recognition of MES; (3) reduce the demand on existing Extension faculty; (4) involve the faculty in the design and testing of new technologies; (5) assess the effectiveness of the audiotex project in meeting consumer needs; (6) extend information services sites and hours; (7) identify factors impacting the effectiveness of the system; (8) identify ways the system might be improved; and (9) determine if audiotex should be offered statewide. Evaluation was based on interviews with participating extension agents, interviews with a sample of users, expert review of audiotex messages, collection and analysis of generated use statistics, and follow-up questionnaires to users. The evaluation focused on user characteristics, rotary user response, rotary and touch-tone user response, and users' knowledge of/attitude toward MES. Results indicated that the project was successful in meeting its objectives. Limitations of the technology were that it cannot provide the full range of services to rotary telephone users, that it cannot provide diagnostic or in-depth information, and that it requires continued marketing support. Implementation of INFO-U in selected urban areas and ongoing support for the service are recommended. (MES)

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MINNESOTA EXTENSION SERVICE
UNIVERSITY OF MINNESOTA
TELECOMMUNICATIONS DEVELOPMENT CENTER

TDC

# TDC Research Report No. 5

May 1989

## Audiotex Information Systems: Answering Consumer Queries Electronically

Sharon Conlan, Robert Rubinyi, Paul Lee, Stacey Stockdill, and Diane Morehouse

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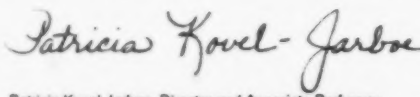

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# Audiotex Information Systems: Answering Consumer Queries Electronically

Sharon Conlan, Robert Rubinyi, Paul Lee, Stacey Stockdill, and Diane Morehouse*


## ABSTRACT

*During 1987-88, TDC initiated a 14-month pilot of an audiotex information service (INFO-U) in Olmsted and St. Louis counties. The project was to assess the feasibility of the technology in Minnesota Extension Service county offices to respond to the thousands of consumer telephone queries on home horticulture and home economics that county agents handle annually.*

*Audiotex proves to be a successful technology in responding to many consumer questions. The technology is well liked by consumers. However, audiotex is better suited for urban application because of a higher density of Touch-Tone telephone service, which is required to access the system fully. These systems require a significant level of marketing to prevent them from becoming "invisible."*


## INTRODUCTION

During fall 1987, the University of Minnesota's Telecommunications Development Center (TDC) initiated a 14-month, two-county pilot of an audiotex information service. Developed by the University of Wisconsin Communications Development Center (UWCDC) and modified by TDC, the fully automated telephone information service was designed to provide an alternative method for county extension offices to provide issues-oriented information, and to more efficiently address consumers' questions.[1]

County extension offices are a primary source of information for consumers, particularly those having problems with or questions about horticultural and home economics issues. However, responding to the volume of questions is a major problem for county extension staff. The project's goal was to study the potential effectiveness of this system in answering questions, and also in reducing the burden large volumes of questions by phone presented for county offices. A variety of information systems have been tried in an attempt to meet the needs of county staff. Among the shortcomings of these systems have been the need for a live operator and system costs.

The Minnesota audiotex system, INFO-U, was installed and tested in two Minnesota Extension Service (MES) county offices: St. Louis County (Duluth) which handles 11,000 telephone inquiries annually, and Olmsted County (Rochester) which handles 2,500. The INFO-U pilot began in September 1987 and concluded in October 1988. Implementation, technical support, training, project documentation, and marketing direction were facilitated by TDC and the Educational Development System (EDS)[2]. The project evaluation was designed by and conducted under the auspices of QED (Quality Evaluation and Development), evaluation consultants to TDC.

## BACKGROUND

In April 1987, the UWCDC initiated field trials of a new audiotex service called Audio InfoSource in three Wisconsin locations. The system was designed to address one of the more visible information needs in Wisconsin Extension's county offices -- answering the numerous home horticulture and food processing/preservation queries that peak during the growing season.

Automated telephone information services such as InfoSource and INFO-U do not require an operator, a significant, ongoing expense with previously attempted manual systems. And, the cost of both hardware and software was sufficiently low to encourage its use in county offices.

During fall 1987, UWCDC received funding from TDC for a project to assist the Minnesota Extension Service in establishing demonstration of a similar system, INFO-U. The project's goals can be divided into three major areas:

**Institutional concerns:**

- To explore the potential for regional Extension cooperation and resource sharing.
- To increase recognition of the Minnesota Extension Service and the services it provides to the residents of the state.
- To reduce the demand on existing Extension faculty resulting from simultaneous budget cuts and increased usage of popular information services.

*The authors are, respectively, MES program designer and assistant professor; MES technology systems leader, TDC technology specialist, and assistant professor; TDC communications director and former MES marketing leader and assistant professor; associate, QED; and president, QED.

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- To directly involve faculty in the design and testing of new technologies.

**Client concerns:**

- To assess the effectiveness of the audiotex project in meeting the needs of consumers.
- To extend Extension information services to sites other than the county office and to non-traditional hours.
- To identify factors which promote or limit the effectiveness of the audiotex system.
- To identify ways the audiotex system might be improved.

**Implementation concerns:**

- To determine if audiotex should be offered statewide.

### Description

The audiotex system used in the INFO-U project is a microcomputer-based system that can accommodate multiple telephone lines. The system includes:

1) an IBM AT compatible microcomputer;
2) two high performance 80 megabyte hard disk drives (Seagate were used) providing 14 hours of voice storage;
3) a 1.2 Megabyte floppy drive;
4) a voice digitizing board (Dialogic 40);
5) a monochrome monitor;
6) a bias box and telephone handset (to permit local updating of messages);
7) ITIS (Interactive Telephone Information System from Telephone Response Technologies, Sacramento, Calif.) audiotex software editor;
8) Info-U applications software developed by the University of Wisconsin and modified by the University of Minnesota.

The total system costs were approximately $6,500. The system hardware is expected to last five years. No major equipment breakdowns occurred during the project trial.

**Content.** Initial content was based on existing Wisconsin and Minnesota Teletip scripts, which were reviewed and modified for appropriateness. (Teletip was the predecessor to INFO-U.) In July 1988, 110 new scripts were added, some of which addressed Extension's issue areas such as waste recycling, aging, and the drought.

**Training.** Wisconsin's training materials were rewritten extensively, and an agent/user manual was developed. Two Wisconsin staff members involved with InfoSource conducted a one-day seminar at the St. Paul campus. The equipment was installed in the two Minnesota counties approximately three weeks after the training session. Additional training was conducted in spring 1988 which covered the changes made to the system during the winter.

## HOW THE INFO-U SYSTEM IS USED

There are five ways the system is currently being used. The first and most frequent use is when clients call the system directly to request specific messages. Those who have a Touch-Tone phone 1) read the brochure and determine in advance what message they want; 2) use the touch pad on their phone and press in a three-digit message number, and listen to the message; and 3) have the option of pressing in another three-digit number at the end of the message. They can repeat these steps as many times as they wish. The caller with a rotary phone stays on the line to hear a special tip of the day. Directions for both types of phone users are printed in the brochure.

The second most popular use of the system occurs when county office staff transfer callers into the system. This occurs when a caller telephones the office to ask a question and an agent is not available to answer it. The person answering the phone: 1) checks to see whether a message is available addressing the caller's concern, 2) explains that an agent is not available but that the caller can listen to a recorded message on the topic; and 3) transfers the call to the audiotex system. This option was not used often during the early stages of the project, but use rose after additional training was provided.

Third, the system is used to promote Extension publications. At the end of each call, the caller has an opportunity to leave a name and address to receive a publication list by mail. Office staff collect these names from the system and mail lists and order forms daily.

Accessing local messages on the system is the fourth way of using INFO-U. These custom messages might include: 1) information on classes being offered; 2) announcements related to a crisis situation (such as treatment for a sudden insect infestation) or a special local event; and 3) organizational announcements (such as dates of upcoming meetings). This option was used to a limited extent during fall 1987, but usage increased during the remainder of the pilot.

The fifth type of use occurs when agents transfer callers into the system. This option has not been used often, nor is its use encouraged but is available.

## PILOT COUNTIES DEMOGRAPHICS

Total population and percentage of households with Touch-Tone telephone service (necessary to fully activate the INFO-U options) are both important variables related to the success of services like INFO-U in a given geographical area.

In 1987-88, Rochester had a population of 33,735, and an additional 38,910 resided in surrounding communities for a total area population of 72,645. A total of 98,000 resided in Olmsted County. Touch-Tone phone penetration was relatively high for Rochester (54 percent). A smaller number (34 percent) in the rest of the county had Touch-Tone telephones. The area also benefited from a large free-calling area that covers about 95 percent of Olmsted County.

For Duluth, the 1987-88 figures were higher with a total city population of 50,635, and 42,176 in surrounding communities, for a total of 92,811. St. Louis County population was 222,000. Touch-Tone phone penetration was lower in Duluth (34 percent overall, and 20-25 percent in the rest of the county), while the free-calling area covers only about 50 percent of St. Louis County. The land area of St. Louis County is nine times larger than that of Olmsted County.

## MARKETING AND PROMOTING THE SERVICE

The marketing activities and evaluation of this project are divided into two parts: April-July 1988 and August-October 1988. In April and August, INFO-U brochures were distributed as inserts with local telephone bills (Northwestern Bell Telephone Company/U.S. West Communications) to residences in Duluth and Rochester and several smaller cities in the free-calling area surrounding the two larger communities.[3]

**Table 1.**
**Analysis of Calls to INFO-U**
**(Number and Percent of Calls to Duluth and Rochester)**

| | Duluth | | Rochester | | |
|---|---|---|---|---|---|
| | No. | Pct. | No. | Pct. | Total |
| April | 1,964 | 67.1 | 964 | 32.9 | 2,928 |
| May | 2,283 | 68.1 | 1,067 | 31.9 | 3,350 |
| June | 1,169 | 76.6 | 357 | 23.4 | 1,526 |
| July | 449 | 67.0 | 215 | 33.0 | 664 |
| **Subtotal** | **5,865** | **69.0** | **2,603** | **31.0** | **8,468** |
| August | 1,954 | 68.0 | 895 | 32.0 | 2,849 |
| September | 1,657 | 62.0 | 974 | 38.0 | 2,631 |
| October | 755 | 66.0 | 393 | 34.0 | 1,168 |
| **Subtotal** | **4,386** | **65.0** | **2,262** | **35.0** | **6,648** |
| **Total** | **10,251** | **67.0** | **4,865** | **33.0** | **15,116** |

In April, nearly 100,000 brochures were distributed. The Duluth office, serving the larger of the project's two cities, distributed 59,000 or 60 percent of the total. The Rochester office distributed 40,000 or 40 percent. In August, 87,000 copies of a second brochure were distributed with local telephone bills. (This brochure contained 110 new informational topics.) Duluth distributed 53,000 or 60 percent of the brochures, and Rochester distributed 34,000 or 40 percent.

It was anticipated that the number of telephone calls to INFO-U would mirror the percentages for the number of brochures delivered to residences with telephone bills (i.e., 60 percent for Duluth and 40 percent for Rochester). It was assumed residents in both communities would act and respond similarly, that there are no inherent differences in the behavior of recipients in the two communities. It was also assumed that the mailed brochure would be the major influence on whether or not people used the service.

For the April-July period, Duluth and Rochester took different approaches to media coverage and promotional activities. (Each of the two operations was budgeted $1,000 for marketing of INFO-U for March-November.) Duluth had significantly more news, advertising, and promotional coverage early on. For the same period, Rochester took a more modest approach at first, opting to delay news, advertising, and other promotional activities until later.

While Duluth distributed 60 percent of the brochures via the telephone bill, it received 69 percent of the total calls during April-July. (See Table 1.) This is significant because Duluth and St. Louis County have a lower penetration of Touch-Tone telephones.

The media and promotion efforts were reversed for the two counties for the August-October period. While Duluth reported no activity in either area, Rochester had a stronger promotional effort than it did during the first part. During this period, Rochester increased its percentage of calls to 35. (It registered 31 percent for the first part.)

## EVALUATION

The evaluation was segmented into two distinct phases. The first phase during fall 1987 was to identify the strengths and weaknesses in the system prior to its implementation (formative). The second phase (April-October 1988) was to examine the effectiveness of the project in achieving its intended goals (summative). Given the differing purposes, approaches, and results, each phase's results are reported separately here. The evaluation was planned and conducted under the auspices of QED (Quality Evaluation and Development), evaluation consultants to TDC. Data were gathered by the consultants, and by TDC and MES staff, with consultation from QED.

### Evaluation Approach and Methodology

During the first phase of the pilot (fall 1987), the system was publicized, on a limited scale, to approximately 2,000 persons in each county, who were previous users of Extension information services, to identify any technical or other problems which could be solved prior to the system's wider implementation.

A variety of data collection methods was used including observations of individual's use of the system to obtain user profiles. The primary method was individualized observation of new consumer use of the INFO-U system, followed by focus group interviews with users. Other methods included: telephone interviews with participating extension agents; telephone interviews with a sample of users with the two pilot sites; and expert review of the quality and content of the prerecorded audiotex messages.

A number of modifications were made based on the formative evaluation, including changes in content and number of messages, more simplified instructions (for both Touch-Tone and rotary telephones), and more targeted promotional strategies. In addition, Touch-Tone user options were reduced from five to two. The project was then considered ready for a wider implementation and study. During April 1988, the INFO-U system was publicly announced in both counties.

Data gathering during the second phase of the INFO-U project was designed to document patterns of system use, generate summative information from consumers, and derive information from extension agents about the potential value and applicability of the automated system. Methods included: telephone interviews with participating extension agents; collection and analysis of INFO-U generated use statistics; and, mail of follow-up questionnaires to users.

### User Data: April-October 1988

**Duluth**. During the entire second phase (April-October 1988), the INFO-U system received a total of 10,251 calls from consumers. (See Table 2.) Consumer calls occupied the system a total of 602 hours. Nearly one-third (32 percent) were calls from rotary phone users who are not able to access the system fully. Use was highest in May (2,283 calls) and lowest in July (449 calls). The average number of monthly calls was 1,464 over the seven-month period.

In May the system was in use an average of 262 minutes per day; in July it was used an average of 57 minutes per day. Over the entire period the average daily use was 169 minutes or 2.8 hours. The average call was 3.6 minutes in length. The most popular topics were seasonally related (e.g., food preservation).

County extension staff made limited use of the option for transferring client calls into the system. On average, only 16 calls per month were transferred into the system by county staff. It should be noted that during July, 62 calls were transferred compared to a previous high of 13. Staff reported that very few consumers called back; those who did were generally seeking additional information, and did not report negative reactions to the computerized system.

**Rochester.** Use of the system by Olmsted County residents was considerably less than that of St. Louis County residents. (See Table 3.) During the seven-month second phase (April-October 1988), the INFO-U system received a total of 4,865 calls from consumers, approximately 25 percent of whom were rotary phone users. Use was highest in May (1,067 calls) and lowest in July (215 calls). The average number of monthly calls was 695 over the seven-month period. Consumer calls occupied INFO-U a total of 283 hours.

In April the system was in use an average of 121 minutes per day; in July it was used an average of 26 minutes per day. Over the entire period the average daily use was 80 minutes or 1.3 hours. The average call was 3.5 minutes in length. On average, 6 calls per month were transferred into the system by extension staff.

### User Survey Data

At the end of a call, callers are invited to leave their names and addresses in order to receive an Extension publications list. When the publication lists were mailed, a survey form and a stamped self-addressed return envelope were included. Although response rate and sampling problems are evident with this methodology, this is the most pragmatic approach to generating consumer feedback. It is, however, quite possible that the response is heavily weighted toward the more information-oriented and more motivated INFO-U user.

During this period, 461 surveys were mailed from the Duluth offices, with 261 returned or an overall response rate of 57 percent. This response rate is approximately 3 percent of the total calls received. In Rochester, a total of 178 surveys were distributed and 106 returned, for an overall response rate of 60 percent. This represents slightly under 4 percent of total call volume. In total, this represents 367 responsed, or 58 percent of those to whom questionnaires were distributed. The evaluation summary focused on four areas:

**User characteristics:**

- Forty percent of the respondents were 51 years of age or older. In both counties, the largest single category of users/respondents were those in the 61+ age group.
- Slightly over half the respondents (52 percent) listened to messages they "knew something about."
- Approximately equal proportions of respondents had and had not used a personal computer or terminal. A much higher proportion of respondents from the Rochester area reported they had previously used computers (71 percent Rochester, 42 percent Duluth).
- A majority (52 percent) indicated they had used the INFO-U system just once.
- Respondents indicated they used INFO-U both for general interest information and to get answers to specific questions. However, 61 percent of respondents reported using the system to get specific information.
- Over half indicated they "would like the information right away, but could wait a few days" for it.
- In order of mention, respondents normally seek similar information from: 1) Minnesota Extension Service, 2) libraries, and 3) garden centers.
- Respondents heard about INFO-U from a number of sources, with the largest numbers through the mail.

**Rotary user response:**

- The respondents with rotary phone service reported that they basically understood the limitations of their phone service, but a number indicated feeling left out because they could not select a message.
- Some reported feelings of "anger" that they could not select messages other than the top tips.
- Rotary-user respondents indicated that the messages they were able to hear were interesting.
- From the survey, there was an indication that at least some consumers would consider adding Touch-Tone service as automated information systems like INFO-U become more broadly available.
- Rotary users were glad they were able to leave their names and addresses to receive additional information.

**Rotary and Touch-Tone user response:**

- Respondents indicated they enjoyed using the INFO-U service. The mean response was 4.4 on a scale of (1) not at all to (5) very much.
- Respondents reported they learned "something useful" from the INFO-U service. The average response was 4.0 on the same scale.

**Table 2.**
**Duluth INFO-U Cumulative Montly Overall Count Statistics**

| Statistics | April | May | June | July | Aug. | Sept. | Oct. | Total/Averages |
|---|---|---|---|---|---|---|---|---|
| Total calls | 1,964 | 2,283 | 1,169 | 449 | 1,954 | 1,657 | 775 | 10,251 1,464 avg. |
| Rotary calls | 714 (36%) | 750 (33%) | 372 (32%) | 125 (28%) | 610 (31%) | 527 (32%) | 195 (25%) | 3,293 (32%) |
| % of callers requesting pub. list | 3% | 6% | 5% | 4% | 4% | 4% | 4% | 4.3% avg. |
| All lines busy (minutes) | 28 | 33 | 13 | 0 | 20 | 8 | 1 | 14.7 min/month |
| Total call time hours | 112 h. 23 m. | 135 h. 9 m. | 67 h. 27 m. | 29 h. 14 m. | 113 h. 40 m. | 99 h. 32 m. | 44 h. 46 m. | 602 h. - 86 h./month 43 m. - 6 m/month |
| Minutes | 6,767 | 8,117 | 4,047 | 1,754 | 6,820 | 5,972 | 2,686 | 36,163 5,166 min./month |
| Avg. min./day | 225 | 262 | 135 | 57 | 220 | 199 | 87 | 169 avg. min./day |
| Avg. min./call | 3.5 | 3.6 | 3.5 | 3.9 | 3.5 | 3.6 | 3.5 | 3.6 avg. min./call |
| # county trans. into system | 13 | 4 | 11 | 5 | 62 | 16 | 11 | 16 calls/month |

- Respondents provided a somewhat mixed response on the extent to which the information "solved their problem."
- Over half of those responding indicated the system provides information which is not available elsewhere.
- The service was reported to be more convenient than other sources of information by 75 percent of those responding.
- Respondents indicated it was important to have this type of information available after hours and/or on weekends.
- INFO-U was rated, on average, as a good or excellent source of information by 88 percent of respondents.
- Respondents reported they were very likely to use the INFO-U service again.
- Ninety-seven percent of respondents believed the service should be continued, and an approximately equal percentage (95 percent) would recommend it to a friend.
- Despite a favorable overall response, users were largely unwilling to support the service on a pay-per-call basis.

**Users knowledge of/attitude toward the Minnesota Extension Service:**

- Approximately 40 percent of those returning questionnaires were unaware that "inexpensive information publications were available from the Minnesota Extension Service."
- Those familiar with Extension programs were aware of and had used a variety of services or programs.
- Nearly two-thirds of respondents indicated that INFO-U had changed their view of Extension, in a positive way (based on surveys and user comments).
- Eighty-four percent of respondents reported that it was important or very important for Extension to offer services like INFO-U.

### Extension Agents Response

Participating extension agents were very pleased with the performance of the audiotex system. It is effective for answering basic consumer questions. One agent noted that while the system has certain inherent limits, "...what it does, it does very well."

An Olmsted extension agent reported that INFO-U can "... probably handle 75-80 percent of the (consumer) questions received at the office," and that, theoretically, one would expect it would free up staff. But as awareness increases and the system becomes more visible, the total volume of calls to the office increases.

Agents noted that the system's real strength is that it can be tailored to specific county needs, and "...counties then don't have to depend on something to be sent from the University." Agents indicated that INFO-U should be considered by other counties as an effective way to address consumers' questions.

## CONCLUSIONS AND RECOMMENDATIONS

### Overall evaluation

According to the evaluation, the TDC-funded audiotex project has clearly been a successful undertaking, both in terms of meeting its objectives and in providing the Minnesota Extension Service with excellent information about this information-delivery method. The audiotex system appears to be an effective method for county extension offices to continue to be responsive to consumers' questions, and to provide issues-oriented information without unduly taxing existing Extension faculty, staff, and facilities.

The INFO-U system received considerable use in the two pilot counties, provided both general and specific information to consumers, and has been quite positively received by users. Clients indicated they enjoyed using the system, found it convenient to use, found the information helpful, and strongly supported its continuation. Moreover, extension agents and staff have been similarly supportive of the system, indicating that their clients are pleased with the system which may ultimately permit these counties to address nearly three-fourths of their clients' questions. Both pilot counties have decided to continue to use the INFO-U system.

In addition, the availability of information through INFO-U appears to have contributed to an expanded knowledge of the programs and services of the Minnesota Extension Service, and to changed attitudes toward Extension. Some respondents strongly suggested that the availability of this kind of information service may help shape their attitudes about MES.

The evaluators also believe that the project was extremely well implemented and that its pilot test was thorough, appropriate, and handled conscientiously and well by the staff. Data collected during the preliminary pilot test were immediately used by project staff in making changes in the number of and content of messages, in the

**Table 3.**
**Rochester INFO-U Cumulative Montly Overall Count Statistics**

| Statistics | April | May | June | July | Aug. | Sept. | Oct. | Total/Averages |
|---|---|---|---|---|---|---|---|---|
| Total calls | 964 | 1,067 | 357 | 215 | 895 | 974 | 393 | 4,865 695 avg. |
| Rotary calls | 213 | 236 | 90 | 69 | 223 | 225 | 101 | 1,157 |
| | (22%) | (22%) | (25%) | (32%) | (25%) | (23%) | (26%) | (24%) |
| % of callers requesting pub. list | 3% | 4% | 2% | 3% | 2% | 3% | 3% | 2.9% |
| All lines busy (minutes) | 3 | 4 | 0 | 0 | 5 | 15 | 0 | 27 min.<br>3.9 min./month |
| Total call time hours | 60 h.<br>23 m. | 60 h.<br>9 m. | 22 h.<br>42 m. | 13 h.<br>19 m. | 48 h.<br>24 m. | 58 h.<br>32 m. | 19 h.<br>34 m. | 283 h. - 40 h./month<br>5 m. - 0 m/month |
| Minutes | 3,623 | 3,609 | 1,362 | 799 | 2,904 | 3,512 | 1,174 | 16,983<br>2,426 min./month |
| Avg. min./day | 121 | 116 | 46 | 26 | 94 | 117 | 38 | 80 avg. min./day |
| Avg. min./call | 3.8 | 3.4 | 3.8 | 3.7 | 3.2 | 3.6 | 3.0 | 3.5 avg. min./call |
| # county trans. into system | 18 | 7 | 4 | 1 | 10 | 1 | 0 | 6 calls/month |

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system's instructional and promotional material, and in making hardware and software modifications to permit easier use of the information system by county staff. This information also contributed to a solid understanding of the factors which might limit the effectiveness of the system in a larger implementation. Project staff have been responsive to consumer and county staff concerns about the system, the evaluators said.

Despite these important technical and related changes, however, the system does have certain limitations. First, it cannot provide a full range of services to rotary phone users. Thus, its effectiveness in remotely located, rural, counties may be minimal. Second, the project can provide general information, but it cannot provide diagnostic or other in-depth services.[4] Thus, it cannot serve as a "stand-alone" method of consumer service. Third, as the marketing data clearly reveal, the service does need publicity and promotional effort (See below.), which will increase its operational cost.

Given the success of the project's implementation and the quality of the field test information, the INFO-U system appears ready for a wider implementation within the Minnesota Extension Service. Where counties have high levels of demand for information services, the audiotex system can provide a relatively inexpensive, easy to implement, and effective method for providing consumer services.

### Marketing evaluation

Many consumer services require marketing, and the INFO-U system is no exception. Three marketing findings are suggested. First, early "paid" advertising provided momentum for building calls to the audiotex system. Second, a more concerted effort in promotion generated more calls. Third, usage falls the longer the system is in place, unless marketing support continues. (The decline in usage could also be attributed to seasonal fluxuations.)

In addition, more market research needs to be done around two questions:

*What is the best method for distribution of Info-U information?* Distributing the brochures local telephone bills was the method used in this pilot study. There are other direct mail and delivery options available, as well. Cost is a factor, and counties may want to explore which methods will be most cost effective and beneficial.

*When should "free" and "paid" media be used?* "Free" media -- articles in newspapers, PSAs (public service announcements), and news reports on television and radio, etc. -- are good, but little control can be exercised over placement. "Free" media should be supplemented with "paid" advertising. Duluth showed the benefit of obtaining both "free" media and "paid" advertising early.

### Recommendations

Based upon the research conducted to date, the system should continue to be supported and slowly expanded to offer service to additional counties and clusters.[5] The following recommendations specifically for the Minnesota Extension Service were made:

*Recommendation 1. MES should encourage selected urban counties to acquire INFO-U equipment.* The INFO-U service should be maintained and slowly expanded over a period of years to reach more residents in the state. Urban counties should be encouraged to acquire the system first (research has shown that the service is more suited to these counties).

*Recommendation 2. MES and especially Extension program area leaders (in agriculture, community economic development, natural resources, 4-H, and home economics) should provide ongoing support for the MES INFO-U service.*

Additionally, audiotex systems may be appropriate for adoption in similar consumer/staff situation with largely repetitive inquiries. While audiotex technology provides consistency and quality when used appropriately, it is not an "implement and forget" technology (i.e., it requires updating, promotion, etc.)

[1] In 1987, the Minnesota Extension Service adopted an issues-based approach to delivery of some educational programming. Issues programming is a multidisciplinary approach to address contemporary concerns (i.e., water quality, rural revitalization, farm family support, etc.). Much of Extension's programming continues to be delivered through five program areas: agriculture, home economics, 4-H youth development, community economic development, and natural resources.

[2] The Educational Development System (EDS) is a unit of MES that produced educational materials and gives support to program areas and county offices.

[3] When the project was initiated, the telephone company was Northwestern Bell Telephone. The company became U.S. West Communications.

[4] MES also supports DIAL-U, a pay-per-call diagnosis service on horticulture topics.

[5] The Minnesota Extension Service county offices are organized along three dimensions. The county offices are entities themselves. Each county operates in a district, an administrative structure. And, each county belongs to a cluster, which are bounded by programmatic similarities (e.g., forestry, etc.).